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AUTHOR Johnson, Harry A.
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ABSTRACT

Educational technology offers apparently unlimited promises to furnish instructional tools that will enable educators to capitalize, in ghetto schools, on the findings of research on the learning process. The successful use of this technology demands a cooperative approach to curriculum development, a retraining of school personnel, and a plan of action whereby each teacher and learner knows the instructional objectives, the process of reaching them, and the need for constant evaluation. (SP)

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THE PROMISES OF EDUCATIONAL TECHNOLOGY IN GHETTO SCHOOLS--

IMPLEMENTING THE COLEMAN REPORT

by Harry A. Johnson*

Present day curricula in ghetto schools are not meeting the instructional needs of youth. It is not designed for them, not understood by them, useless to them and is the chief contributor to the problems of discipline and dropouts. The ghetto youth is academically and intellectually behind his suburban-majority counterpart; short of skills, verbal self-expressions, training and refinements, and all the other attributes which lend themselves to learning. He is, however, well aware of certain measures of self protection, he has grown up and matured rapidly, formulated many mistrusts and survived the wear and tear of the ghetto and the fated hand of prejudice and discrimination when venturing from its confines. He sees the enemies; the police, the rent collector, the teacher, a drunken father, a grocery store boss--and they all dispute his passage. When he comes to school, if he comes to school, he comes with more of a complexity of burdens than any children anywhere in the world. He's concerned with being drafted for the Vietnam War, he's eighteen and plagued with an ignorance and fear of venereal diseases surrounding him, usually hungry or never quite full, dressed in clothes which he long ago learned to despise and he is already tired from the long walk to school from a tenement house where babies cried all through the long night, and equally frustrated parents fought either verbally or physically in an interminable conflict. He gets to school just on time, but most likely late to get the abuse of a battery of middle class rules and regulations from middle class school personnel with middle class values and an obsolete middle class curriculum planned around a scheduled set of time blocks that won't move an inch. At

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* Harry A. Johnson is associate dean at Virginia State College.

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9:00 a.m. he is greeted with a talking face, the same one he left yesterday, droaning on and on about dates, location and details of the Hundred Years War between France and England. And really, who gives a damn? Not even the teacher, who fifty-three times out of a hundred grew up in the same neighborhood, finished the local high school, and a city teachers college, all to come back to teach about a subject she knows little about and cares less about. Her meager, dull, uninspired "teaching" is all she can bring forth from an impoverished social, economic and academic past. So it goes on and on, cycle repeating itself, getting worse as the world around them moves into the age of technology and space. That is a part of the picture of a ghetto child and the school he goes to and the home he comes from. Wherein there are many exceptions to this picture, the mere fact that it exists at all should foster a disquieting and repugnant feeling to all Americans.

The survey known as the Coleman Report[1] sounds a ringing rebuke to the failure of contemporary American education to meet the needs of low status minority poor of this land. The survey represented a massive effort involving many quantitative measures. Complete sets of information were collected for more than 3,000 schools representing about 650,000 students in five grades of public school. More than 60,000 teachers, several thousand principals and several hundred superintendents in school districts also responded to this research. These data were analyzed in 1966 and the 737 page Coleman Report, Equality of Educational Opportunity was published by the U. S. Office of Education in the summer of 1966.

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[1]James S. Coleman and others, Equality of Educational Opportunity. (Washington, D. C: Office of Education, U. S. Department of Health, Education, and Welfare, 1966).

Deep as it is in statistics, facts and fallacy, it is accurate enough to sound warnings of the presence of social and political dynamite ready to be ignited into the greatest social explosion since the French Revolution. Enough generalizations may be drawn from these massive statistics to get the message about the unequal opportunities in American education.

Some grave questions, however, should be raised about the Coleman Report. The report gives three sources as bases for pupil achievement: (1) family background; (2) characteristics of the school (teachers, curriculum, facilities, resources, etc.); and (3) attributes of peer groups. The report blatantly, through design or through ineptness, understates the importance of school resources in explaining variations in achievement. The instrument for measuring school resources is highly inadequate, especially in light of the potential of measuring resources and achievement. As a matter of fact, the only resources apparently measured in the report were those which could have been measured a half century ago, namely, the library and the presence of laboratory facilities. Consequently, absent were the modern tools of learning resources, of instructional technology, including instructional television, films and programmed materials, independent study materials and equipment, audio and video tapes, computer assisted instruction, and a wide variety of even the more traditional audiovisual materials for learning.

The Coleman Report research design, without a doubt, overestimated the importance of family background as well as underestimated the influence of school resources on student achievement. Henry Levin states that a particularly glaring example of the incomplete measurement of school characteristics is the absence of the measure of class size in

the regression analysis.[1] Coleman reported that the pupil-teacher ratio in instruction: "showed a consistant lack of relation to achievement among all groups under all conditions."[2] Levin contends that the report obtained its pupil-teacher ratio by dividing the enrollment of the school by the number of teachers. Says Levin, "The survey's published data suggests that the teaching load per school varies from a low of about four to a high of six hours a day. This range of teaching loads implies a potential difference of as much as fifty percent in class sizes for schools with the same pupil-teacher ratio."[3] Thus, despite its sweeping assertion, the report could not possibly answer the question of how class size affects learning, in general or under particular conditions, since class size was never used in the analysis.

It should be pointed out also that the Coleman investigation was not successful in securing information from more than 40 percent of the sample schools. This alone has some validity for the acceptance of this report in its total. Other reactions to the accuracy and validity are of no mean interest. Noted Harvard statistician, Frederick Mostella, reports Mr. Levin, served as chairman of a task force which examined some of the statistical evidence underlying the Coleman findings. In viewing Coleman's technique of first "controlling" for student background before examining the role of school resources, Mostella's task force concluded

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[1]Henry M. Levin, "What Difference Do Schools Make?", Saturday Review, January 20, 1968., p. 27.

[2]Coleman, op. cit.

[3]Levin, op. cit.

that "the things used to control were so highly correlated with things being adjusted that school effects were largely removed."[1] Further: "In problems where we have such strong correlation between the background characteristics and where the situation is utterly confused, the adjustment can be misleading."[2] And, finally, "We believe therefore that conclusions drawn from this part of the analysis can be badly misleading."[3]

American education can indeed be grateful to Professor James S. Coleman, principal author, and his staff for the quantitative study Equality of Educational Opportunity, which points up to the American people the status of segregated urban education in America. Wherein the Coleman report points a bleak picture of the status equality of education in America, it is felt by many educators that the opportunity can exist for quality education.

The Systems Approach

The approach that is most likely to pay off big dividends in restructuring the cirriculum and educational environment of ghetto schools is an instructional systems approach to learning with built-in technological resources. Many forces prohibit any other approach. Poorly trained teachers, outdated facilities, haphazard use of technology, ignorance on the part of administrators and teachers regarding use of mediated materials, absence of skills in constructing educational objectives and countless other reasons prohibit continuing in the manner in which we have gone. Over and over again we see in ghetto schools, language laboratories not operating,

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[1] Ibid.

[2] Ibid.

[3] Ibid.

awaiting a repairman, several projectors and no film, or films and no light control for use. Few ghetto schools are equipped with the needed resources and facilities for independent study or small group work. Teachers tire of hunting down the custodian to release a motion picture projector that finally comes without the essential extension cord.

A Title XI NDEA Institute for school principals of ghetto schools recently was an eye-opener regarding the place of media in the teaching-learning process. Most of these educators had regarded media, if at all, as a shuffling back and forth of motion picture projectors to and from the library. All, and I repeat, all, were aghast at the present involvement of many schools already operating with systems approach to instruction, simple dial access facilities, electronically operated independent study carrels, team teaching, varying sized groups, teachers free to prepare materials for large group instruction, and a variety of other kinds of educational innovations. Heretofore, district level purchasing agents and administrators have been hoodwinked into buying scores of overhead projectors with no thought of securing materials, locally or commercially; or new reading machines for elementary schools which are designed and programmed for utilization in the junior high and high school. All of these problems and countless others demand a team approach to redesigning the curriculum, setting of behavioral objectives, restraining teachers, orientation of administrators, unilization of educational media experts, supplementary and supporting staff, all within an instructional systems approach to educating ghetto youth. This concept may surprise some educators because it implies that never before had there been systematic planning in educating children. Much like the term "programmed," "systems" has a new meaning in the realm of technological

communications. Indeed, whatever system educators have used, never before have they included the many essential components of learners, teachers, schedules, facilities, media, different groupings, individualization, programming, stimuli, responses, technology, materials, curriculum planners, etc. Barry Morris describes a new use of media in a system this way:

> The newer media have led us to a new approach to instruction. This is a scientifically developed combination of instructors, materials, and technological media for providing optimum learning with a minimum of routine personal involvement by the teacher. The result is a carefully planned "system" consisting of subject matter, procedures, and media coordinated in a program unit design which is directed toward specific behavioral objectives. A variety of learning channels are combined in such a system. Decisions as to where and how to use teacher presentation, discussion, media presentation, programmed learning sequences, or other channels, will be made in terms of what and who is to be taught.[1]

A definition of "systems approach" by the Department of Audiovisual Instruction Commission on Technology sets forth in its official release of the following statement:

> An integrated programmed complex of instructional media, machinery, and personnel whose components are structured as a single unit with a schedule of time and sequential phasing. Its purpose is to insure that the components of the organic whole will be available with the proper characteristics at the proper time to contribute to the total system, and in doing to fulfill the goals which have been established.[2]

The information explosion, poorly prepared teachers, high turnover rate of teachers and learners in the ghetto schools, and the uniqueness

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[1]Barry Morris (ed.), "The Function of Media in the Public Schools" (Prepared by a DAVI Task Force in 1962 as a position paper), Audiovisual Instruction, Vol. 8, No. 1, January 1963.

[2]Donald P. Ely (ed.) (Prepared by the Commission), "Alphabetical Listing of Terminology," Audiovisual Communication Review, Vol. 11, No. 1, Supp. 6, January 1963.

of minority groups and their special needs all urgently cry for the ghetto teacher to change her role from principal presenter of the message to a more useful membership in a revised educational strategy. Technology is urgently needed in ghetto schools in an effort to ease the boredom of talking faces which add more to drop-out problems than perhaps any other single contributor. Under the present conditions, language laboratories, independent study carrels, television program sequences are used or not used at the discretion of an overworked and overwrought teacher, but within a systems approach they function in the educational process at the curriculum planning phase and in its execution. Technology should cease being used principally for enrichment learning, but should be an integral part of the process of educating. It becomes an integral component of the message.

To operate in a systems approach, media will take its rightful place in the teaching-learning process. The array of technology and media which would be plugged into a system includes the whole array of television and video, tape packages, 2 x 2 slides and filmstrips, motion pictures, realia, audio teaching tapes, telelectures, graphic materials, mock-ups simulations, and other more traditional audiovisual resources--all built into and claiming a portion of the whole, not in isolation, not at whim, but coupled with such other innovation as team teaching, new flexible facilities, and above all, a school-wide philosophy that believes in and encourages the permissiveness necessary to arrive at the objectives of such a dramatic and new venture.

To really be operational and testable, such a system will recognize first of all, not lastly, the essentials of stating goals and setting up

specific behavioral objectives that are clear and unequivocally stated. Robert F. Mager coherently states it:

> When clearly defined goals are lacking, it is impossible to evaluate a course or program efficiently, and there is no sound basis for selecting appropriate materials, content, or instructional methods. After all, the machinist does not select a tool until he knows what operation he intends to perform. Neither does a composer orchestrate a score until he knows what effects he wishes to achieve. Similarly, a builder does not select his materials or specify a schedule for construction until he has his blueprints (objectives) before him. Too often, however, one hears teachers arguing the relative merits of textbooks or other aids of the classroom versus the laboratory, without ever specifying just what goal the aid or method is to assist in achieving. I cannot emphasize too strongly the point that an instructor will function in a fog of his own making until he knows just what he wants his students to be able to do at the end of the instruction.[1]

Far too many teachers in ghetto schools cannot do this. Teaching and testing at the present time in most schools is one long guessing game with students as to what they will be tested for and how to say it like the teacher wants it said. Clear, precise objectives stated and understood by teachers and learners at the outset in the systems approach will by and large eliminate the uncertainty on the part of the learners. (An example of the systems approach is cited on page 10.)

A Relevent Curriculum

By and large, ghetto children dislike or hate the school curriculum. Their greatest joy at school is often a denied opportunity to relate and react to each other. They have every right to this feeling. What they are required to do in the planned curriculum is irrelevant as to both content and method. Kenneth Clark puts it succinctly:

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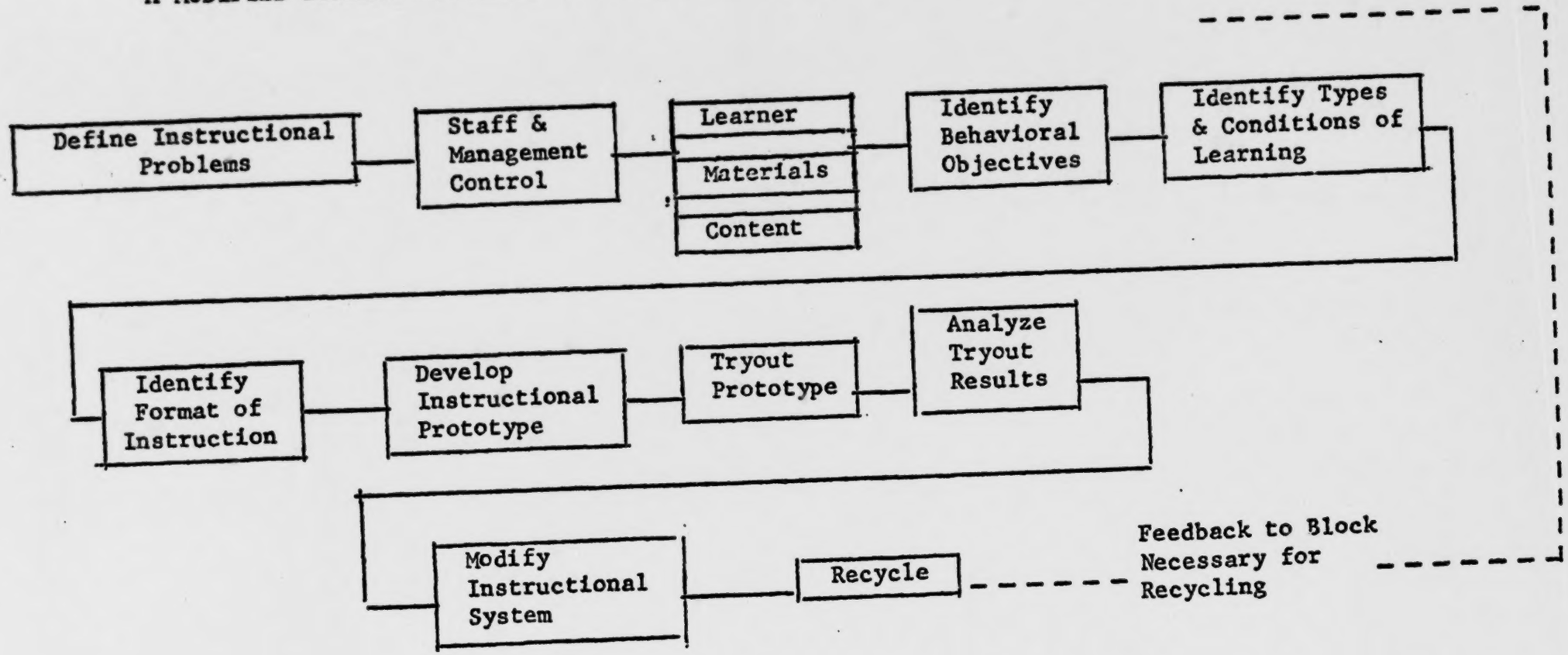
[1]Robert F. Mager, Preparing Instructional Objectives (California: Fearon Publishers, Inc., 1962, p. 3.

A MODIFIED SYSTEMS APPROACH FOR DEVELOPING INSTRUCTIONAL SYSTEMS FOR GHETTO SCHOOLS



> What I believe I know about the nature of this crisis I think can be summarized in one sentence or, more accurately, one anguished explanation--namely, contemporary American education, urban public education, is a national disaster. A calamity. A catastrophic, inefficient situation. A social and political powder keg, awaiting just a capricious spark to set off a tremendous social explosion.
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> The chief victims of this calamity are clearly low-status minority-group children and other children from low-income families. The public educational system has broken down in terms of fulfilling the responsibility of preparing these children for a meaningful role in our society. . . Specifically, these children, literally abandoned by our public schools, in terms of any meaningful definition of the term education, are suffering from a pattern of unsolved educational problems.[1]

Dr. Clark goes on to state further:

> But the data that are available support without question the clamitous, catastrophic, criminally inefficient level of public education in deprived areas. These data support the fact that the retardation is cumulative; that the longer the children remain in school, the further behind they fall in the basic subjects when compared with more privileged children. Drop-outs are excessive, and analysis of the drop-outs leaves at least this observer to believe that these children are probably the more intelligent, in that they escape from a dehumanized and intolerable situation.[2]

In his address for the Educational Media Council on Television as an Educational Tool, Dr. Clark goes on to further state:

> First, develop a parallel educational program on television. And, I'm suggesting, outside of the control of the present educational bureaucracy. A parallel educational program in basic skills of reading, arithmetic, communication--oral and written, etc.[3]

One may not agree with all of Dr. Clark's recommendations, but certainly must agree that ghetto schools and minority groups must shake

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[1]Kenneth B. Clark, "Unstructuring Education," New Relationships in ITV. (Washington, D. C.: Educational Media Council, Inc., 1967).

[2]Ibid.

[3]Ibid.

off the shackles of the whole middle class aura that prevails from pre-school to college. We have mimicked and aped and copied middle class values to such an extent that it has destroyed the very fabric of the educational system for minority groups. Let us look at Head Start programs and pre-school activities. These projects insist on modeling their programs on those of conventional middle class nursery schools. They contend that these children have the same needs and the same range of personalities as all children; therefore a child development center should have the same aims for their pre-school experiences, etc. Middle class nursery schools operate on the theory that they can directly influence only the child's emotional and social development, not his mental growth. They assume that if they build up a shy child's confidence or re-direct an angry one's aggression, a child's intellectual development will take care of itself. Therefore, they concentrate on getting along with others and other time wasting objectives.

Slum children must make up for lost time from pre-school and kindergarten through college. Teaching children to get along with others and to adjust to groups and develop appreciation of other children are outstanding objectives. However, they are not the most crucial to nursery school slum children. The poor cannot afford such luxuries. What they have not learned at home by the age of four, they must learn elsewhere and quickly. They must make up for lost time, unlearn old habits which is much harder than learning new ones, and also catch up with others who do not have such problems. Although Head Start centers are purely local operations, few of them have been innovative in their approach to teaching slum children. They have been based on the same

principles as those for middle class children which does not emphasize intellectual development. Nearly all of these programs have failed to produce any great improvements in children's readiness for school. According to Dr. Samuel A. Kirk, an authority on retarded children, a given infant may grow up to have an IQ of 80 with a poor environment or 120 with a good environment. Only the outer limits of man's intelligence are fixed by heredity. But the older the child grows, the more difficult it is to produce a given amount of change in his intelligence. Therefore, since the most rapid growth of intelligence takes place before the age of four, efforts must be changed in these early years in working with children's intelligence. Some innovators of this point of view would send battalions of tutors into poor children's homes like visiting nurses and social workers to provide appropriate toys and to talk to babies to develop their intelligence. Others would set up the European type creche or children's day care centers on every crowded city block with educational programs that are geared to toddlers. Slum children of two to three years old would take part in specific learning sequences and would be taught to listen and repeat and to think and to respond. Perhaps, based on the famous Montessori techniques or educational methods, children will begin to develop their intellect in the slum area in these early years. The same type of a hard-nose approach to learning needs to be carried through the elementary and secondary levels and when economically deprived children and ghetto youth reach college age, they will either be skilled craftsmen or they will be ready for the academe of the college program.

Perhaps the most important reason for the multi-media or technological approach to instruction for the economically deprived lies in what Frank

Riessman calls "style of learning." In planning strategies of learning for youngsters who have been disadvantaged, the fact that these patterns do exist should be a guiding factor. In individualizing instruction, each child's strengths and weaknesses should be diagnosed and treated through the most effective strategies available. Says Frank Riessman:

> One index of style relates to whether you learn things most easily through reading or through hearing, or whether you learn through doing things physically; whether you learn things slowly, or quickly; whether you learn things in a one track way or whether you are very flexible in your learning. The examples just cited are not to be seen as separate from one another. There can be combinations such as a visual-physical learner who learns in a slow, one track fashion.[1]

The tragic need for technological resources beyond those now offered to the slum teacher is reflected in the Coleman Report. "Fifty-three percent of the teachers have lived in the same locality most of their lives."[2] What this really means is that these teachers have grown up in the same slum neighborhood, finished the same ghetto schools and most likely have had college training in predominantly Negro colleges which are below the national ratings of institutions of higher education in almost everything. As an additional insult to ghetto youth the Coleman Report further states that only 46 out of 100 teachers in ghetto schools would not care to move if given the opportunity. Of these forty-six, it would be indeed interesting to know what percentage would prefer to stay because of their own insecurity and tragic shortcomings that would be glaring in a more demanding school district.

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[1]Frank Riessman, "The Strategy of Style," Education of the Disadvantaged (ed. by A. Harry Passow, et. al.) (New York: Holt, Rinehart and Winston, Inc., 1967), p. 327.

[2]Coleman, op. cit.

The answer then is technology. The ghetto teacher must be re-trained to play a more important role in management of the learning environment and less of a role as presenter of information. The risk is too high to have it any other way. The systematic use of technology is going to prove even more upgrading in pupil achievement in ghetto schools than the predominantly white suburban schools. This assumption is indicated in the Coleman Report:

> The school of the minority pupil will increase his achievement more than will improving the school of the white child increase his. Similarly, the average minority pupil's achievement will suffer more in a school of low quality than will the average white pupils. In short, whites, and to a lesser extent, oriental Americans are less affected one way or the other by the quality of their schools than are minority pupils.[1]

What this is really saying is that our minority youth must look more to the school than other youth in preparing them totally for the society in which they are to enter. "The deficiency in achievement," states the Coleman Report in referring to minority groups, "is progressively greater for minority pupils at progressively higher grade levels."[2] Now let's look at some of the promises of technology in schools for minority groups which promise new directions toward achievement.

Dial Access and Information Retrieval Systems

Dial access and information retrieval systems would utilize materials designed for the ghetto youth. In a study of civics, he learns respect for police and how to get a job by learning something about taking

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[1] Ibid.

[2] Ibid.

examinations for police work, learning behind the scene responsibilities of police, hearing audio tapes by police and city officials regarding preparations for job requirements. Girls, in the privacy of a dial access system, learn about protection from pregnancies and venereal diseases and the dangers of abortions. Through multi-high school tie-ups dial access youngsters learn typing and shorthand skills, see examples of everyday economics for developing a perspective on consumer buying, see examples of the three branches of the federal government as explained on videotape by Ralph Bunche or Senator Edward Brooke.

Programmed Materials and Independent Learning

Programmed materials built into the system of a ghetto school will show infinite patience with the youngster who starts from behind as he attempts to grasp the concepts of the economy, the mortgage and interest rates on buying a car, carrying charges and real estate assessments. These, he can do at his own pace and at his own rate of speed. He builds his limited vocabulary with programmed materials; simple mathematical solutions, principles of combustion engines, and the process of how the local city government functions; all at his or her own rate and pace with no frustrating failures, no competition, no sarcasm from a teacher tired of repeating, no threats of failure. With programmed materials he has a wealth of properly programmed materials which paint for him a total picture in small sequences which he can handle, and the immediate feedback gives a sense of confidence and a sense of accomplishment.

Study carrels and independent learning through single concept 8mm film, record players, filmstrips, and color slides with earphones lend a person-to-person excitement. These properly programmed materials can

follow through an inspiring teacher's introduction to general shop fundamentals of bricklaying, or carpentry, or typing, or music. The system employing carrels has in it as an integrated element the vast resources of 8mm single concept films for skill building in using saws and lathes, or 8mm sound films and music by outstanding Negro writers like Phil Medley or Undine Moore; Negro poetry recorded by Gwendolyn Brooks herself, or some materials by Diahann Carroll or Sidney Portier, on the unglamorous side of the road to success, or an audio recording on "What It Is To Be A Man," humorously, but solidly delivered by Bill Cosby. Technology and the software yet to be produced will banish boredom, the talking face, and perhaps diminish the problem of dropouts.

Tape teaching, programming for flexible groupings, re-deploying the teacher for more professional flexibility and personalized assistance, and programming learners into sequences utilizing audio tapes will prove to be one of the most profitable facets of educational technology. One of the serious problems in some ghetto schools is the high turnover rate by both teachers and students. A well-developed library on audio tapes can serve a variety of purposes. Each tape can be individualized instruction to the learner in a tutorial arrangement, and the tape is generally better planned and sequenced than most live lectures. Also, the learner can turn it on or off or replay as his needs demand. An additional feature is wiring a classroom or a laboratory to the tape recorder whereby youngsters are free to move about as instructions are given and to have both hands free for developing skills and participating in other activities. For example, in learning to use the library, there are such activities as dictionary usage, how to read a map, or how to set up electronically for

furthering learning. The youngster puts on the tape (or an attendant may do so) and the tape patiently and slowly sequences the learning experience. This technique may be used in a language laboratory, science laboratory, or for instructions in the industrial education laboratory. Mr. Arthur Lalime, of Darien, Connecticut, has experimented with and found excellent results in tape teaching. He states:

> Taped lessons can be instructional and they can be fun. For example, stories may be recorded on tape and the students can "read to" via the tape playback and earphones. Students usually have a greater degree of comprehension through listening than when the student reads the selection silently. With book in hand, the student can read silently as the teacher on the tape recording reads the story. The earphone creates the sensation that the teacher is talking directly to the child. This type of tape lesson is also being used to help slow readers master the social studies and science material that may be too difficult to read without help. This is a "read with me" situation in which the teacher can make reference to new words, and explain illustrations. Once these taped materials are prepared by the teacher, they can be used at any time with one or many students.
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> Pre-recorded instruction makes possible the initial teaching of phonetic and word analysis skills as well as providing many opportunities for review of these phonetic skills as the need arises. Tape recorded lessons dealing with these specific skills are prepared in a planned sequence to insure continuity.
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> Commercially prepared records can also be linked to the tape tables and earphones system. Many teachers believe that the earphones add a new dimension to listening. Teachers have indicated that recorded programs played to the entire class were not effective, but when used with earphones the recorded programs were a "great success."[1]

Ghetto youngsters, out of necessity, through crowded experiences and the absence of privacy, have learned to become passive hearers, whereby they listen only when something affects them personally or they have an interest or need to listen. This need can be fulfilled through a special training for ghetto youngsters. Slum children can be taught to listen

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[1] Arthur W. Lalime, "Tape Teaching" (a Report prepared for the Norwalk Board of Education, February, 1967)

critically and they can be taught to paint their own creative pictures through listening, if the physical environment for listening has been properly established.

Learning By Television

Television can do more than any other educational media toward helping minority youngsters identify and develop a pride in race, origin and cultural heritage. By and large educational television has not begun to tap the potential it has for minority and slum children. Commercial television has recently made a start.

All three commercial networks and NET initiated special series defining, exploring, and explaining the plight of the black man in America. The most ambitious of these projects was the CBS entry, Of Black America, a seven part series purporting to deal in some cohesive fashion with the history, heritage and significance of the black American.

The advent of the portable classroom television recorder can assist teachers in building into learning experiences the resources of libraries of video tapes, made locally by students and teachers. The video tapes may be scheduled into small seminar group work and even independent work by students, or used with earphones in a variety of ways. If local talent is used for such programs it adds variety and identity for slow children.

The medium must use its fullest artistry and skill to produce educational and training programs just as it does to produce entertainment telecasting. A TV program must be kept totally in perspective. A television sequence showing a group of suburban, blue-eyed, fair-haired, happy kids in rural Wisconsin is one segment of our nation's great populus, just as a class of all black kids from an inner city school in Harlem. Therefore,

educational television must, out of honesty and integrity, blend all segments to focus on the whole ball of wax when recording the nation's picture. This includes southerners, poor whites of Appalachia, the Mexican-Americans in the far West, the West Coast orientals, Indians throughout the country, Puerto Ricans in the East, the migrants, as well as Negroes and other minority groups. Each of these groups has contributed in its own way to the growth and development of America. Remiss TV will be if it fails to capture the greatness of our nation's melting pot and fails to foster in every citizen an appreciation for that diversity. Educational television must "tell it like it is."

Educational television can help to solve many of the pressing and vital problems of instruction from pre-school education to adult education, and its content and format should be so designed. It has an even greater potential in schools where there are underpaid teachers, overcrowded classrooms, shortages of skilled and well-trained teachers, poor educational services, poor support, and dull unimaginative curricula. ETV can help boost the morale of teachers and even upgrade the level of respect for the teaching profession. It can succeed only as an integral member of the educational industry. School and community personnel, both, must be so integrated into the planning and production process as well as the utilization process, that program sequences and series are created from, and based upon evaluation and feedback from these consumers.

Educational Television has a potential more than any other media for helping to equalize the quality of instruction. In reply to a question asked a teacher in a rural section of a southern state recently, "What important effect has educational television made upon you?" her reply

was, "It has been the most thoroughly effective course in educational methodology I have had. My classroom teaching has improved from watching TV teachers. This includes everything from attitude towards children to skill-developing activities." This, and other concomitant potentials of educational television, should not be underestimated.

Television resources will give slow children an opportunity to deal with the vast, never ending information and knowledge explosion. Unlike his white middle class suburban brothers, the ghetto youth, in order to even survive in the mainstream competition, must play catch up!

Computer Assisted Instruction

Computer assisted instruction in the systems approach for minority youth can help catapult them into the mainstream of our society. Computers and their limitless promises seem to offer a portion of the solution. Ignorance on the part of educators as to the wide range of potentials of computers in education must be eliminated. Computer assisted instruction and individualized instruction, coupled with other media and the teachers are ideal. A ghetto school with limited resources, poorly prepared teachers and a low level of achievement can turn to the computers because the computer can make decisions based on the assessments of student performance, matching resources to individual student needs. One such decision might be for the computer to present lesson materials directly to the student in a tutorial mode.

The computer is capable of serving a large group of learners simultaneously, dealing with the same problems. It therefore becomes a tool for problem solving, far more resourceful than a teacher in much shorter time. Before the student can make the computer solve his mathematical problem, he must analyze the problem and explicitly formulate its

solution as a series of discrete, operationally defined steps corresponding to the computer"s repertoire of operations. This type of high level experience quickly removes the bright slum child out of the restrictions and limitations of a mediocre ghetto teacher. Repeatedly, I refer to the poor quality of ghetto teachers. It must be remembered that just a few years ago, before any serious thought was given to racial ghetto education, few whites knew and most couldn't care less about the training of teachers for and the quality of teaching in ghetto schools. The products of these schools are mainly our ghetto teachers of today.

Let us explore briefly the RCA Instructional 70 System which has infinite potentials in upgrading the achievement of ghetto youth. The system is a multi-purpose computer-assisted instruction system designed to provide highly individualized daily instruction for up to 6000 students during classroom hours, and also to perform special after-hours instructional functions, a broad variety of educational services, and the administrative data-processing requirements of a large city school district, multi-campus university or other major educational activity.

The Instructional 70 System utilized an RCA Spectra 70/45 computer to drive up to 192 remotely-located student instructional terminals simultaneously, each terminal presenting curriculum materials continuously adjusted to the learning rate and capability of the individual student working at it. System response time at each terminal, all terminals operating simultaneously, is approximately half a second. Curriculum materials for use with the system are offered directly to system users by leading textbook publishers. Subject matter available includes elementary arithmetic, elementary language arts, and elementary science.

Simplicity is the keynote in operation; the System is designed to be used by professional educators, not computer specialists. Records are kept of each student's progress and reports are provided for the convenience of the teacher.

In an experiment at the BOCES[1] Demonstration Center in Westchester County, a New York project directed by Walter Goodman, efforts were made to try a computer system through the use of simulated techniques. The three economics games which were used in this project represent one kind of tactic in the broad strategy of simulation. Simulation, or the "simulated environment mode," is a methodological technique designed to provide individual students with substitutions for the significant features of a natural or conventional learning situation realized by the delivery of a teacher-made instructional program through the resources of a computer system.

This type of computer use has great potentials for ghetto youth, too. They could have invented simulation. They know all about it. They use it daily to survive. The computer has so much potential that the limit of its use is equaled only by the stretch of the imagination.

Instructional Resources Centers

Regional and district instructional resources centers may prove to be the most efficient hub around which the logistics of this paper could function. Educational programs utilized in the fullest potentials of educational technology must engage a partnership never before known involving teachers, supervisors, school boards, administrators, trainers

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[1]Richard L. Wing, "The Relation of Computer-Based Instruction and Other Media to Individualized Education" (DAVI Conference, Atlantic City, N. Y., April 4, 1967).

of teachers, researchers, and the resources of the community, backed up by well-organized, well-staffed and well-equipped regional and district instructional materials centers. For too long, teachers and administrators have brought with them the unimaginative influences of the nation's teachers colleges where books and printed materials and the obsession with reading have been followed out of proportion as a need in ghetto schools. Some youngsters learn fast those essentials necessary for survival. It is a wonder thay ever learn to read, considering the fares that are dished up to learn on. The regional IRC backing up every ghetto school will be far-reaching, for single schools will perhaps never afford the vast materials and equipment necessary. Such centers will include transparencies and masters, 16mm instructional films, 8mm films for independent study, audio tapes, video tapes, and kinescopes, production facilities with staff well qualified in producing local materials, flat pictures and filmstrips and color slides on meaningful subjects and minority identities. A functional distribution system will give each school what it needs.

Such a plan would be even more economical and operational in the Educational Park concept now being employed or planned for several urban areas. The Educational Park which is not entirely new in concept, collects enough students at one point to make better quality education economically possible. The more concentrated are the youth to be served and the more central are the physical facilities the greater the chances for really effective use of educational technology. Most of the proposals for the Educational Park are unique within themselves, but there are common elements which are critical because they stem from the same purposes. One is large size, with several thousand youth centered on one campus. A

second and related aspect is location to serve its purpose. The Educational Park must be located so that it can draw from a variety of neighborhoods. And a third element is the effort toward excellence and variety in programming, instruction and facilities. It is within this third factor that a systems approach to instruction with educational media can make its greatest contribution. It is here that the instructional materials center comes into its fullest effectiveness, serving perhaps through underground cable or television requirements for the campus and through distribution by dial access means and other means fulfilling the requirements of systems tailor-made to the various aspects of the Park.

Research and Educational Technology

One might ask, what does research say about technology and learning? There are sufficient research results substantiating the need for the serious incorporation of technology into the teaching-learning process. Several publications are worthy of note here as listed by John Moldstad. Indiana University:

Allen, William H., "Audio-Visual Communications," Encyclopedia of Educational Research, pp. 115-137, edited by Chester W. Harris, The MacMillan Co., New York, 1960

Reviews the research in audiovisual communication during the last decade under five major headings: (a) effectiveness of audiovisual materials, (b) audience-learner characteristics, (c) characteristics of the learning environment, (d) use of audiovisual materials, and (e) administration of audiovisual programs, Includes a 320 item bibliography of research studies.

Chu, Godwin C. and Schramm, Wilbur, Learning From Television: What the Research Says, (U. S. Office of Education, Contract 2 EFC 70894), Institute for Communication Research, Stanford University, 1967.

Restricted to review of instructional television and includes the following six areas concerning the conditions of effective

learning from television: (a) how much pupils learn from instructional television, (b) efficient use of the medium in a school system, (c) treatment, situation, and pupil variables, (d) attitudes toward instructional television, (e) television in developing regions, and (f) learning from television compared with learning from other media.

Finn, James D., and Allen, William H., Co-Chairman, "Instructional Materials: Educational Media and Technology," Review of Educational Research 32: 115-221, April, 1962. (American Educational Research Association, 1201 Sixteenth Street, N. W. Washington, D. C.)

Reviews the research literature from 1956 to 1962 under the following headings: (a) theoretical formulations in audiovisual communications, (b) textbooks and other printed materials, (c) audiovisual materials, (d) learning from instructional television, (e) language laboratories, (f) self-teaching devices and programmed materials, and (g) administration of instructional materials.

Godfrey, Eleanor P., The State of Audiovisual Technology: 1961-1966 Monograph #3, Department of Audiovisual Instruction of the National Education Association, Washington, D. C., 1967,217 pp.

Examines three surveys of national scope in audiovisual technology conducted during a six-year period from 1961-1966. Identifies the audiovisual resources available in the individual schools, describes the extent to which these resources are used by teachers in different grade levels and subject specialists, and considers factors that encourage or inhibit use.

Kumata, Hideya, An Inventory of Instructional Television Research, Educational Television and Radio Center, Michigan State University of Ann Arbor, 1956, 115pp.

Restricted to studies of the teaching of formal courses by television and includes (a) a review of research findings and (b) a collection of abstracts of pertinent articles. Intended as a guide to those interested in further study of the use of television in formal instruction situations.

Lumsdaine, Arthur A., "Instruments and Media in Instruction," Handbook of Research on Teaching, American Educational Research Association, Rand McNally and Company, Chicago, 1963, pp. 583-682.

Part 1: Theoretical Orientations also include valuable back ground for the researcher.

1. Historic Exemplars of Teaching Method
2. Logic and Scientific Method in Research on Teaching
3. Paradigms for Research on Teaching

Reid, J. Christopher, and MacLennan, Donald W., Research in Instructional Television and Film, U. S. Department of Health, Education, and Welfare, Washington, D. C., 1967,216pp. (Superintendent of Documents, U. S. Government Printing Office Washington, D. C. 20402)

Presents a summarization of 333 research studies concerned with instructional films and instructional television in the period 1950 to 1964. The introductory review points out the direction in which the research has been going, the present status of the research, and some possible future directions.

Wendt, Paul R., Audiovisual Instruction, Department of Classroom Teachers of the National Education Association and the American Educational Research Association, Washington, D. C., 1964, 32 pp.

Discusses the nature of communication and the role of audiovisual materials in classroom instruction. Presents research material on audiovisual instruction which promises to be of most help to classroom teachers, identifies factors affecting the value of audiovisual instruction, and considers what audiovisual materials can and cannot do.

Summaries of the research papers presented at the annual Department of Audiovisual Instruction's national convention have been included in the following issues of AV Instruction:

Moldstad, John, "Summary of A-V Research, AV Instruction, September, 1964, pp. 492-497.

"Highlights of 1965 Research Reports," AV Instruction, June-July, 1965, pp. 528-531.

"1966 Research Reports Feature the Controlled Experiment," AV Instruction, June-July, 1966.

"1967 Research Studies Stress Stimulus Variables and Technology," AV Instruction, June-July, 1967, pp. 638-642.

Godwin C. Chu and Wilbur Schramm point up several encouraging and exciting research findings on the use of media, several of which are listed below. Each of these headings constitute an umbrella for a number of successful studies on the respective subjects. They are:

Given favorable conditions, pupils can learn from any instructional media that are now available.

> Television and radio have certain advantages over films in flexibility and deliverability.
>
> More complete control of film by the classroom teacher gives it a potential advantage over television.
>
> There is some evidence to suggest that moving visual images will improve learning if the continuity of action is an essential part of the learning task.
>
> Student response is effectively controlled by programmed methods, regardless of the instructional medium.[1]

Training Teachers For Immaginative Uses of Multi-Media

There is no longer any real doubt that children learn a great deal from technology, whether educational or not, so long as the experience seems relevant to them. It is the major task now of educators to provide the favorable conditions under which technology may be used.

The emotional content of meaning, such an essential ingredient in motivating our actions, is particularly difficult to get through to slum children through verbalizing and reading. The kind of training teachers colleges have afforded teachers is partly responsible for ignorance of these facts.

The training of teachers to work with slum children must get out of the doldrums of the conservative content of liberal arts courses and the abstract binds of professional education courses and into involvement with people.

Failure of teacher preparation to use the fast-growing resources of educational technology is reflected in a report on the results of a teacher-opinion poll published in the December 1963 issue of the NEA

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[1] Godwin C. Chu and Wilbur Schramm, Learning From Television: What the Research Says, (Washington, D. C.: National Association of Educational Broadcasters, 1967), pp.84-95.

Journal. The NEA Research Division asked "a scientifically selected cross-section of the nation's one and a half million public school teachers" how their college preparation had fitted them for teaching. Every teacher education faculty concerned with change should have the results of that survey: over 60 percent of the teachers reported too little preparation in the use of audiovisual equipment and techniques; over 40 percent, too little teaching methods; and only 27 percent, too little in subject knowledge.

A well-designed teacher education curriculum will provide teachers with preservice and inservice experience in many new techniques, whether in audiovisual courses or portions of methods courses is not important as long as it is related to the development of theory and practice.

A retraining of teachers in the imaginative uses of multimedia and the newer techniques is a prerequisite to understanding and solving the learning problems of children of the poor. But most important is attitude change. Old stereotypes and prejudices picked up from middle class American standards must be re-examined. Teachers must learn that, although poverty and racial discrimination may force many people to live in the slums, there can yet be found among them higher standards of conduct and family life, better manners, and higher life goals than are to be found in many middle class suburban families. This fact again points to the great diversity among ghetto youth and the need for individualized learning. Trainers of teachers must train them to develop the skills necessary for finding solutions to the many-faceted problems of the poor.

During the period of reflecting and researching for this paper, the writer went into several schools to observe and talk with teachers,

children and administrators. Perhaps it is safe to generalize that many ghetto teachers are working against surprising odds. Class sizes from 38 to 40 and often 45 children seem the rule rather than exception. Outmoded architectural arrangements pour as many as fifteen hundred humans in one or two small corridors at once. There was evidence of little organization and administration of non-print materials, making mediated instruction almost impossible. The absence of a media specialist seems to be one of the most obvious personnel weaknesses in each school. Over-crowdedness in general is one of the most serious problems. Classes meet in cafeterias each hour of the day excluding the three shift services. The lack of opportunity for some privacy, small group instruction, individual study, team teaching facilities, instructional materials--all defy innovation.

On the otherhand, to see three teachers, with a huge overhead screen and a public address system, working with over a hundred and fifty children in a cafeteria was wonderful. A typing teacher moving among her charges as the typing to music disc sent out a rhythmic beat and loud and clear instruction was great. A language laboratory or rather an electronic classroom built to the specifications and needs of the school, created by the industrial teacher, is a sight worthy to be seen. These and other efforts were bright spots in an otherwise intolerable climate.

In his article "Education: The Racial Gap," Christopher Jencks in reviewing the Coleman Report states:.

> . . . pouring more money into Negro schools will probably accomplish little or nothing. While the Report does not prove that as yet untried improvements in school facilities and programs (e.g., computers) would have no significant effect on learning, it does provide a good deal of indirect evidence that this kind of innovation has made very little difference in the past.[1]

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[1]Christopher Jencks, "Education: The Racial Gap," The New Republic, October 1, 1966.

To accept any kind of research of this type without searching out every facet of the research is like using a slum child's I.Q. as the only instrument by which to judge his native ability and ultimate potential. Mr. Jencks writes about the Coleman Report as some Kentucky mountain folk talk about the Bible. What Mr. Jencks fails to apprehend and the Coleman Report misses completely is the likelihood of a combination of factors greatly increasing achievement in slum schools. These combinations would include newer building designs based on educational programs, smaller classes, more learner control of the learning environment, availability and utilization of a variety of educational technology coupled with innovations built into a systems approach to instruction.

The Coleman Report and Mr. Jencks review of it make a point of the lower test scores of teacher of Negro on verbal ability as well as the low verbal ability of Negro children. These unhappy facts are all the more reason to search for changes in the ghetto curriculum. Independent learning environment, variety of media and innovation will remove the teacher as the only presenter of information thus opening the learner's door to an increased verbal capacity.

Often, in our zeal and enthusiasm to encourage innovation and educational technology in ghetto schools, we risk misinterpretation of the increasing importance of the teacher. We pause here to stress the point that the classroom teacher is the essential factor in guiding instruction, in setting up objectives, managing the learning environment and assessing outcomes. The teacher needs all the help she can get, for nothing suggested in this paper has possibility for success without an effective teacher. It is therefore an urgent need to develop programs

for re-training teachers and provide adequate funds for many new in-service experiences for these teachers. This means also an entirely new attitude by some administrators as to the importance of in-service training. These newly trained teachers might easily become the catalyst for change.

The promises of educational technology in ghetto schools are indeed limitless, with new programs recognizing the proper place of technology. Wherein psychology is providing us with much better understanding of the learning process, technology can begin to furnish the instructional tools that will enable educators to capitalize on these findings. The only successful use of technology demands a cooperative approach to curriculum development, a re-training of school personnel, and a plan of action whereby each teacher and learner knows the instructional objectives, the process of reaching them, and recognizes the need for constant evaluation. What this writer is talking about in this paper includes millions and millions of dollars from taxpayers. The Congress that appropriated less than two billion dollars for our poverty program but did not hesitate to vote twenty-seven billion dollars for the war in Vietnam, whose population, ironically, is about that of the American poor, must come to grips with the serious crisis in American education. The American people must understand that the urgency in America equals that of Vietnam and the appropriations necessary to save our cities, our poor, and even our civilization, is a small price to pay.